

**Hebrew University-Hadassah Medical School
P.O.Box 12272
Jerusalem 91120, Israel**

Survival of house dust mites on mattresses from Lisron Ltd.

Report compiled by:

Dr. Kosta Y. Mumcuoglu

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Survival of house dust mites on mattresses from Lisron Ltd.

a. AIM: To determine the survival of house dust mites on mattresses, which should be used as controls for testing special mattresses and coverings of Lisron Ltd.

b. MATERIALS AND METHODS

Mites

Dermatophagoides farinae are cultured in the laboratory using a mixture of horse dander/medical yeast (2:1) at a temperature of $25\pm 1^{\circ}\text{C}$ and 75 ± 5 relative humidity.

Mattresses

Four control mattresses with two different coverings (White: A + B and Blue: C+D) (22x22x8 cm) were tested for the survival of mites under optimal environmental conditions.

Bioassay

0.01 mg of mites taken directly from the colony (without medium) (ca. 250-350 mites) and 40 mg of medium were evenly distributed over the entire surface of the mattress. Thereafter, mattresses were placed to an incubator (24°C and 70-80% relative humidity). The viability of mites was examined under the stereo-microscope after 4 and 8 days. On the 8th day, mites were removed from the mattress surface by shaking it over a container with water. The water was filtered through several white filter papers (Schleicher & Schuell, 604, 7 cm diameter) and the number of live and dead mites was counted under a stereo microscope (5x).

Brought adhesive bands were glued on the surface of each mattress and the few remaining mites were collected and counted as well. Finally, the mattresses were also examined under the stereo-microscope for any remaining mites.

Results

Table 1 shows the results of mite survival during the 8 days of experiment.

Mattress	Exposure (days)	Estimated No. mites	No. living mites
White A	4	+	
White B	4	+	
Blue C	4	++	
Blue D	4	++	
White A	8	(+)	Very few
White B	8	(+)	Very few
Blue C	8	++	345
Blue D	8	++	184

Code: (+) very few; + few, ++ a lot

CONCLUSIONS

Very few mites could be collected from the surface of the white mattresses (A+B). Under the microscope, it could be seen that the distance between the fibers allowed the mites to enter the covering fabric. On the blue mattresses (C+D) mites were apparently behaving normally (laying eggs, copulating and eating). Accordingly, the blue mattresses could be used as controls for future testing of other mattresses.

Survival of house dust mites on mattresses from Lisron Ltd.

a. AIM: To determine the survival of house dust mites on mattresses from Lisron and to compare them with control mattresses.

b. MATERIALS AND METHODS

Mites

Dermatophagoides farinae are cultured in the laboratory using a mixture of horse

dander/medical yeast (2:1) at a temperature of $25\pm 1^{\circ}\text{C}$ and 75 ± 5 relative humidity.

Mattresses

Three mattresses with a netting of 200 micron (20x20x6x2.8 cm) (with 15 strings per cm and 48% open space) were tested and compared with a control mattress having a blue covering (C) (22x22x8 cm) for the survival of mites under optimal environmental conditions.

Bioassay

0.01 mg of mites taken directly from the colony (without medium) (ca. 250-300 mites) and 40 mg of medium were evenly distributed over the entire surface of the mattress. Thereafter, mattresses were placed to an incubator (24°C and 70-80% relative humidity). The viability of mites was examined under the stereo-microscope the following day. On day 1, the test mattresses were rinsed thoroughly with distilled water and thereafter were examined under the stereo-microscope for any remaining mites. Mites were removed from the control mattress surface by shaking it over a container with water. Brought adhesive bands were glued on the surface of each mattress and the few remaining mites were collected and counted as well. Finally, the mattresses were also examined under the stereo-microscope for any remaining mites. The water with mites and medium from all four mattresses was filtered each separately through several white filter papers (Schleicher & Schuell, 604, 7 cm diameter) and the number of live mites was counted under a stereo microscope (5x).

Results

Table 1 shows the results of mite survival 24 hrs after they were placed on mattresses

Mattress	No. living mites	Average
I	9	11
J	14	
K	10	

Control (C)	231	
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CONCLUSIONS

The few mites seen on the surface of the test mattresses (I+J+K), were mainly concentrated in the edges of the mattress where the food and mites could hold between the wood and netting. The distance between the fibers was big enough to not allow mites and medium to remain on the surface. In fact, they fall down immediately, when they were placed on the mattress surface. On the control mattress (C) mites were apparently behaving normally (laying eggs, copulating and eating). While an average of 11 living mites were found on the test mattresses, 231 mites were found on the control mattress.

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Mites

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Mattresses

Three mattresses with a netting of 200 micron (20x20x6x2.8 cm) (with 15 strings per cm and 48% open space) were covered with a blue netting (5 strings per cm and with a string thickness of approximately 1 mm) were tested and compared with a control mattress having a blue covering (C) (22x22x8 cm) for the survival of mites under optimal environmental conditions.

Bioassay

0.01 mg of mites taken directly from the colony (without medium) (ca. 250-300 mites) and 40 mg of medium were evenly distributed over the entire surface of the mattress. Thereafter, mattresses were placed to an incubator (24°C and 70-80% relative

humidity). The viability of mites was examined under the stereo-microscope after 2, 4 and 7 days. On day 7, the test mattresses and the blue nettings were rinsed thoroughly with distilled water and thereafter were examined under the stereo-microscope for any remaining mites. Mites were removed from the control mattress surface by shaking it over a container with water. Brought adhesive bands were glued on the surface of each mattress and the few remaining mites were collected and counted as well. Finally, the mattresses were also examined under the stereo-microscope for any remaining mites. The water with mites and medium from all four mattresses was filtered each separately through several white filter papers (Schleicher & Schuell, 604, 7 cm diameter) and the number of live mites was counted under a stereo microscope (5x).

Results

Table 1 shows the results of mite survival during the 7 days of experiment.

Mattress	Exposure (days)	Estimated No. mites	No. living mites	Average
I	2	(+)		
J	2	+		
K	2	(+)		
Control (C)	2	++		
I	4	(+)		
J	4	(+)		
K	4	(+)		
Control (C)	4	++		
I	7		20	
J	7		27	
K	7		32	
Control (C)	7		490	

Code: (+) very few; + few, ++ a lot

CONCLUSIONS

The few mites seen on the surface of the test mattresses (I+J+K), were mainly

concentrated in the edges of the mattress were the food and mites could hold between the wood and netting. The distance between the fibers was big enough to not allow mites and medium to remain on the surface. In fact, they fall down immediately, when they were placed on the mattress surface. On the control mattress (C) mites were apparently behaving normally (laying eggs, copulating and eating). Ca. 20 times less mites could be found on the test mattresses than on controls after 7 days of exposure.

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Mites

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Mattresses

Two mattresses with a netting of 200 micron (20x20x6x2.8 cm) (with 15 strings per cm and 48% open space) were covered with a pink netting (densely woven with no opening for the mites to enter to the other side of the tissue) were tested and compared with a control mattress having a blue covering (C) (22x22x8 cm) for the survival of mites under optimal environmental conditions.

Bioassay

0.01 mg of mites taken directly from the colony (without medium) (ca. 250-300 mites) and 40 mg of medium were evenly distributed over the entire surface of the mattress. Thereafter, mattresses were placed to an incubator (24°C and 70-80% relative humidity). The viability of mites was examined under the stereo-microscope after 2, 4 and 7 days. On day 7, mites were removed from the cover netting and from mattresses by shaking it over a container with water. The test mattresses were rinsed thoroughly with water. Brought adhesive bands were glued on the surface of each mattress and the few remaining mites were collected and counted as well. Finally, the mattresses were also examined under the stereo-microscope for any remaining mites. The water

with mites and medium from all three mattresses was filtered each separately through several white filter papers (Schleicher & Schuell, 604, 7 cm diameter) and the number of live mites was counted under a stereo microscope (5x).

Results

Table 1 shows the results of mite survival during the 7 days of experiment.

Mattress	Exposure (days)	Estimated No. mites	No. living mites	Average
I	2	++		
J	2	++		
Control (C)	2	++		
I	4	++		
J	4	++		
Control (C)	4	++		
I	7		328	
J	7		281	304.5
Control (C)	7		273	

Code: (+) very few; + few, ++ a lot

CONCLUSIONS

No significant differences between test and control mattresses could be seen.



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